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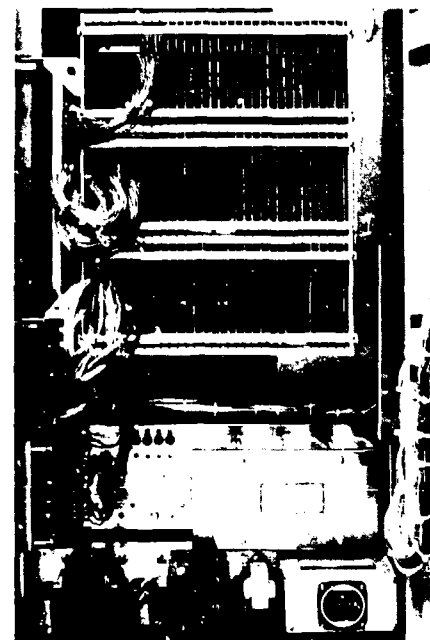
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# FORDAT—An Information Retrieval System For Forest Economic Data

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Time series data frequently used in Forest Service studies of wood products consumption have been stored in a data retrieval system on the computer of the University of Wisconsin. The data cover activity in wood processing from forest to end use. Prices and costs at succeeding stages, historical usage, production rates, and other relevant data to wood use analysis were compiled. The system is available on-line and may be accessed directly or the data may be obtained in printed form by interested users.

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August 1981

# FORDAT—An Information Retrieval System For Forest Economic Data

By  
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## Introduction

Industry associations and government agencies in the United States and abroad annually collect and publish a substantial volume of statistics on the processing and distribution of forest products. To follow industry developments, analysts must collect data from a cumbersome number of sources. Moreover, to compile these data on computer requires a further tedious and errorprone step of entering the data on cards from their originally published source.

It is evident that a nationally available computerized system, containing the most often used data and offering a comprehensive yet easy-to-use English language-based software package, would greatly simplify forest economic and business research. The *Forest Data (FORDAT)* system, developed at the Forest Products Laboratory in Madison, Wis., is offered as a prototype for such a system. It contains data primarily on the production and consumption of wood products in the United States used in analyzing future wood requirements for the National Renewable Resources Planning Act (RPA) process. However, the scope of the contents could ac-

commodate other research goals. To enhance its utility, the data base is matched with an analytical package, called *Time Series Processor (TSP)*, designed for economic analysis and modeling. FORDAT is stored on the University of Wisconsin computer system and is available to anyone with access to that system.

## Program Description

The organization of the data base is outlined in figure 1. There are four categories defined following the general flow of wood from forest to

end use: (1) timber removals, (2) primary timber products, (3) wood commodities, and (4) end-use markets. The collected data were organized on the basis of these divisions.

To retrieve and handle individual data sets effectively, a mnemonic scheme was devised. This scheme is based on five elements in the mnemonic, each of which defines some element or attribute of the particular data series. Strung together in the proper order, the individual elements identify the data and offer a shorthand with which to retrieve

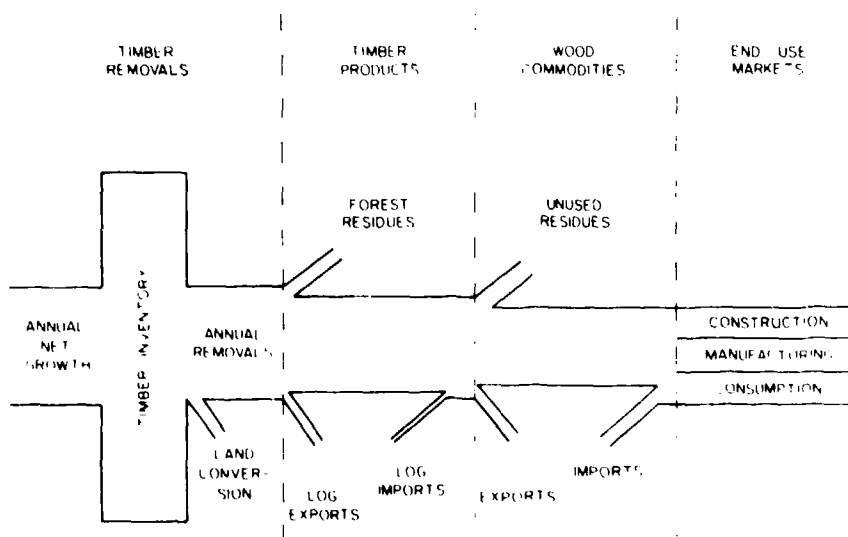


Figure 1.—Outline of the data base FORDAT organization.

<sup>1</sup> Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

and manipulate them. In all cases, the first character in a string tells to which of the four groups listed above the data belong. R refers to the timber removal group, P to timber products, C to wood commodities, and E to end use. Subsequent characters from the lower elements give added information until a unique definition is achieved. Appendix 1 contains the definitions for the codes that constitute the mnemonic for each series. It should be noted that not all combinations of characters represent data stored in the system. Appendix 2 contains the complete listing of FORDAT as of January 1981. Appendix 1 is the key for deciphering the mnemonics listed in appendix 2.

Besides the mnemonics, appendix 2 lists four additional data: (1) the base year from which the series is available; (2) a short description of the data; (3) the units of measurement it is stored in, if this is not obvious; (4) the source of the data. Appendix 3 contains the list of data sources referenced in appendix 2. FORDAT is periodically updated to bring in new or revised data. As of January 1981, most series were available from their given base years to 1979. The data base is being expanded to meet additional research and information needs. An updated listing of contents will be maintained and may be obtained from the work unit.

Most of the data in FORDAT were culled from statistical reports of other agencies or groups. Some, however, were based on a few years of data reported in special studies. In such a case, data for intersurvey years, such as mill capacity estimates for hardboard and insulation board, were derived by interpolation. Softwood lumber and plywood capacities were calculated according to a method reported by Phillips<sup>2</sup> where production figures are plotted for each year with the peaks defined as 100 percent capacity. Interpolation between the peaks yield the intervening data. Interpolation also served to provide sawmill overrun estimates for non-survey years, except for a shift introduced in 1970 due to a grading

rule change that altered existing trends.

FORDAT was designed to be used primarily with the Time Series Processor (TSP) language, an analytical package designed for statistical and econometric analysis. A major advantage of this program is that it requires little formal programming from the user. Catalogued in the TSP library is a set of 80 functions programmed to perform various tasks ranging from estimating parameters for equations (through the technique of least squares) to solving economic models consisting of many relationships. Each function can be made to perform its task by giving the computer the English language code for that function. The calculations are then carried out without the need for the programming that such complex tasks would require. This coding enables interactive use of the computer with a personal console, as well as the more common batch use where instructions must be punched on cards and fed in through a card reader. An illustrative example of an interactive run in TSP with FORDAT is contained in appendix 4. A prospective user, however, should acquire the TSP manual<sup>3</sup> for a complete listing of TSP and its use. This can be obtained from the Madison Academic Computing Center, 1210 Dayton Street, Madison, WI 53706.

### Access

Access to the FORDAT data bank can be gained either directly through a computer hookup or indirectly by requesting a printout. In the latter case, the request should be addressed to National Timber and Wood Products Requirements, Forest Products Laboratory, P.O. Box 5130, Madison, WI 53705, (608)264-5778.

FORDAT is a public computer file so that anyone who has an account with the University of Wisconsin computer system can access it. Details on acquiring a user number and account can be obtained from the MACC at the address above. For those outside the Madison locality,

direct access is feasible only if the user's computer is tied into the Telenet time sharing system. In that case, user code and telephone access information may be obtained from the local Telenet representative.

The FORDAT system is the second forest related data base available on the University of Wisconsin computer work system. Another system, called FSTAT,<sup>4</sup> deals with statistics compiled from FAO computer tapes. These data deal primarily with international trade statistics in forest products.

<sup>2</sup> Almarin Phillips. An appraisal of measures of capacity. *Am. Econ. Rev.* 53(2):275-292 (1963).

<sup>3</sup> D. W. Caves, and Michael Tretheway. *Time Series Processor. MACC, Univ. of Wisconsin, Madison, Wis. 1977.*

<sup>4</sup> J. Buongiorno and D. Ohms. *FSTAT. Res. Bull. R2930. Univ. of Wisconsin, Madison, Wis. 1978.*

# Appendix 1: Variable Coding Key

## CHARACTER LOCATION

1	2	3 and 4	5	6
C - Commodity	C - Consumption D - Apparent Consumption M - Imports P - Price Q - Production R - Recovery/ overrun S - Shipments X - Exports Z - Capacity	BP - Board & Paper BU - Particleboard, underlayment CD - CD Plywood CH - Chips CP - Construction paper DF - Douglas-fir  FL - Fir and Larch HB - Hardboard HC - Hemlock, coast HI - Hemlock inland HL - Hardwood lumber IB - Insulation board LB - Lumber ML - Mill realization, lumber OA - Oak PA - Paper  PB - Particleboard PD - Paperboard PP - Ponderosa pine SL - Softwood lumber SP - Softwood plywood WA - Wastepaper WB - Wet machine board WF - Woodpulp (used in paper) WN - Woodpulp (used in non-paper) WP - Woodpulp WS - White spruce- YP - Yellow Poplar	A - Washington C - Canada  D - Douglas-fir region G - California E - Northeast H - Idaho  I - Inland region K - East southcentral M - Montana N - Northcentral O - Oregon S - South T - South Atlantic U - United States  V - West southcentral X - Northcentral and northeast  <u>For Prices only</u>	B - Board feet C - Cubic feet  S - Square feet T - Tons

12 - 1/2-inch

58 - 5/8-inch

24 - 2x4

12 - 1x12

81 - SIC code for  
softwood lumber

# CHARACTER LOCATION

1	2	3 and 4	5	6
E - End Use	C - Construction	DI - Disposable	C - Canada	A - All types
	F - Factor	FS - Floorsize	E - Northeast	D - Duplex
	N - Population	GP - Gross National Product	N - Northcentral	F - Furniture
	P - Price	G0 - Public, industrial bldgs.	S - South	H - High-rise
	Q - Production	G1 - Public, streets & highways	U - United States	M - Multi-family
	Y - Income	G2 - Public, military	W - West	N - Nominal \$
		G3 - Public, educational bldgs.		O - One-family
		G4 - Public, hospital bldgs.		R - Constant \$
		G5 - Public, conservation		W - Row houses
		G6 - Public, other bldgs.		
		G7 - Public, sewers		
		G8 - Public, water facilities		
		G9 - Public, miscellaneous		
		HH - Households		
		HS - Housing starts		
		H3 - Public, housing		
		IN - Industrial		
		NG - Nonresidential, public		
		NP - Nonresidential, private		
		NR - Nonresidential		
		MH - Mobile home		
		P0 - Private, industrial bldgs.		
		P1 - Private, office & comm. bldgs.		
		P2 - Private, religious bldgs		
		P3 - Private, educational bldgs.		
		P4 - Private, hospital bldgs.		
		P5 - Private, misc. bldgs.		
		P6 - Private, farm nonres.		
		P7 - Private, telephone & telegraph		
		P8 - Private, other public utilities		
		P9 - Private, misc.		
		RA - Repair & alteration, residential		
		ST - Switch ties		
		UC - Underground coal		

# CHARACTER LOCATION—continued

1	2	3 and 4	5	6
		UO - Underground ore		
		XT - Cross ties		
		05 - 0 - 5 years		
		15 - 6 - 15 years		
		24 - 16 - 24 years		
		44 - 25 - 44 years		
		64 - 55 - 64 years		
		65 - 65 + years		
		99 - All ages		

## CHARACTER LOCATION

1	2	3 and 4	5	6
P = Timber Product	M = Import	CH = Chips	C = Canada	B = Board feet
	P = Price	DF = Douglas-fir	L = Louisiana	C = Cords
	Q = Production	DP = Delivered southern pine	P = Peeler grade	Q = Cubic feet
	X = Export	HE = Hemlock	S = Sawmill grade	T = Tons
		HF = Hardwood fibre/pulpwood	U = United States	1 = #1 grade
		HL = Hardwood lumber	W = West	2 = #2 grade
		HO = Hardwood logs		3 = #3 grade
		SF = Softwood fibre/pulpwood		5 = Private
		SL = Softwood lumber		
		SM = Softwood		
		SO = Softwood logs		
		SP = Softwood plywood		
		WP = Woodpulp		

# CHARACTER LOCATION

1	2	3 and 4	5	6
R - Timber Removals	P - Price	BP - Seedbed preparation	A - Washington	1 - Forest Service
	Q - Production	FP - Fire protection	D - Douglas-fir Region	5 - Private
	V - Value	FT - Fertilization	G - California	8 - Total public
		HS - Harvested stumpage	H - Idaho	9 - All ownership
		PL - Planning	L - Louisiana	
		PP - Purchased Southern Pine	M - Montana	
		PR - Site preparation	O - Oregon	
		PS - Purchased stumpage	P - Ponderosa-pine region	
			S - South	
		RC - Release cutting		
		RU - Removals of weed trees		
		TC - Timber cruising		
		TH - Precommercial thinning		
		TM - Timber marking		

## Appendix 2: Data Listing

(Each line contains the variable retrieval code, the base year from which it is available, a description, the unit of measure, and the source from which it was taken (referred to by a number explained in Appendix 3.)

VAR	BASE YEAR	DESCRIPTION	SRC
CDWPUT	1929	APPARENT CONSUMPTION OF WOODPULP	(MIL TONS) (25)
CMHBUT	1944	IMPORTS OF HARDBOARD	(MIL TONS) (28)
CMHLUB	1949	IMPORTS OF HARDWOOD LUMBER	(BIL BD FT) (28)
CMIBUT	1944	IMPORTS OF INSULATION BOARD	(BIL BD FT) (28)
CMPAUT	1929	IMPORTS OF PAPER & BUILDING PAPER	(MIL TONS) (28)
CCWAUT	1939	WASTE PAPER CONSUMED IN US PAPER & BOARD MILLS	(MIL TONS) (25)
CCWFUT	1939	WOOD PULP CONSUMED IN US PAPER & BOARD MILLS	(MIL TONS) (25)
CCWNUT	1939	WOOD PULP CONSUMED IN NON-PAPER PRODUCTS	(MIL TONS) (25)
CCWPUT	1939	WOOD PULP CONSUMED IN PAPER & NON-PAPER PRODUCTS	(MIL TONS) (25)
CDRPUT	1944	APPARENT CONSUMPTION OF PAPER, PAPERBOARD, & BLUG BD	(MIL TONS) (25)
CDHBUT	1944	APPARENT CONSUMPTION OF HARDBOARD	(MIL TONS) (25)
CDIBUT	1944	APPARENT CONSUMPTION OF INSULATION BOARD	(MIL TONS) (25)
CDPAUT	1929	APPARENT CONSUMPTION OF PAPER AND CONSTRUCTION PAPER	(MIL TONS) (25)
CDPDUT	1929	APPARENT CONSUMPTION OF PAPERBOARD & WET MACHINE BD.	(MIL TONS) (25)
CDSLCH	1950	APPARENT CONSUMPTION OF SOFT LMBR. IN CANADA	(BIL BD FT) (13)
CDSLUB	1950	APPARENT CONSUMPTION OF SOFT LMBR.	(BIL BD FT) ( 7)
CDSPUS	1950	APPARENT CONSUMPTION OF SOFT PLYWOOD	(BIL SQ FT) ( 1)
CMPBUS	1963	IMPORTS OF PARTICLEBOARD	(BIL SQ FT) (28)



VAR	BASE YEAR	DESCRIPTION	SRC
CMPDUT	1929	IMPORTS OF PAPERBOARD & WET MACHINE BOARD	(MIL TONS) (28)
CMSLUB	1949	IMPORTS OF SOFT LUMBER	(BIL BD FT) (28)
CHSPUS	1950	IMPORTS OF SOFT PLYWOOD	(BIL SQ FT) (28)
CHWFUT	1929	IMPORTS OF WOODPULP, ALL GRADES	(MIL TONS) (28)
CPBU58	1962	PRICE OF 5/8-INCH PARTICLEBOARD UNDERLAYMENT (WEST)	(\$/MSF) (9)
CPCD12	1950	PRICE OF 1/2-INCH CD-EXT D.F. PLYWOOD, EAST SALES, FOB	(9)
CPDF24	1949	PRICE OF DOUG-FIR 2X4, KD, STD&BTR, RNDM 8/20', NET FOB	(9)
CPFL24	1967	PRICE OF FIR-LARCH 2X4, KD, STD&BTR, RNDM 8/20', NET FOB	(9)
CPHC24	1949	PRICE OF HEM-FIR (COAST) 2X4, KD, STD&BTR, RNDM 8/20', NET FOB	(9)
CPHI24	1949	PRICE OF HEM-FIR (INLAND) 2X4, KD, STD&BTR, RNDM 8/20', NET FOB	(9)
CPHLD	1962	AVE SAWMILL REALIZATION IN THE DOUG-FIR REGION	(\$/MBF) (34)
CPPI12	1950	PRICE OF PONDEROSA PINE BOARDS, 1X12, KD, #2&BTR	(9)
CPSL81	1949	AVE PRODUCER PRICE INDEX FOR SOFTWOOD LUMBER	(1967=1.0) (32)
CQBPOT	1944	PAPER, PAPERBOARD, HARDBOARD, & INS BOARD PRODUCTION	(MIL TONS) (25)
CQCUC	1949	CHIP PRODUCTION	(MIL CORDS) (8)
CQCPUT	1970	CONSTRUCTION PAPER PRODUCTION	(MIL TONS) (25)
CQHBT	1944	HARDBOARD PRODUCTION	(MIL TONS) (25)
CQHUB	1949	HARDWOOD LUMBER PRODUCTION	(BIL BD FT) (7)
CQIBUT	1944	INSULATION BOARD PRODUCTION	(MIL TONS) (25)
CQLB88	1962	PRODUCTION OF LUMBER IN WASHINGTON	(BIL BD FT) (33)
CQLBGB	1962	PRODUCTION OF LUMBER IN CALIFORNIA	(BIL BD FT) (33)
CQLBHR	1962	PRODUCTION OF LUMBER IN IDAHO	(BIL BD FT) (33)
CQLBMB	1962	PRODUCTION OF LUMBER IN MONTANA	(BIL BD FT) (33)
CQLBOR	1962	PRODUCTION OF LUMBER IN OREGON	(BIL BD FT) (33)
CQDAUR	1962	PRODUCTION OF OAK LUMBER	(BIL BD FT) (24)
CQPAUT	1929	PRODUCTION OF PAPER & CONSTRUCTION PAPER	(MIL TONS) (25)
CQPDUT	1929	PRODUCTION OF PAPERBOARD & WET MACHINE BOARD	(MIL TONS) (25)
CQSLCB	1950	PRODUCTION OF SOFT LUMBER IN CANADA	(BIL BD FT.) (13)
CQSLDB	1949	PRODUCTION OF SOFT LUMBER IN DOUG-FIR REGION	(BIL BD FT.) (33)
CQSLEB	1962	PRODUCTION OF SOFT LUMBER IN THE NORTHEAST US	(BIL BD FT) (24)
CQSLIB	1949	PRODUCTION OF SOFT LUMBER IN THE INLAND REGION	(BIL BD FT) (33)
CQSLKB	1962	PRODUCTION OF SOFT LUMBER IN EAST SOUTH CENTRAL US	(BIL BD FT) (24)
CQSLNB	1962	PRODUCTION OF SOFT LUMBER IN NORTHCENTRAL REGION	(BIL BD FT) (24)
CQSLRH	1949	PRODUCTION OF SOFT LUMBER IN REDWOOD REGION	(BIL BD FT) (33)
CQSLSR	1949	PRODUCTION OF SOFT LUMBER IN SOUTH	(BIL BD FT) (7)
CQSLTB	1962	PRODUCTION OF SOFT LUMBER IN SOUTH ATLANTIC REGION	(BIL BD FT) (22)
CQSLUH	1949	PRODUCTION OF SOFT LUMBER IN US	(BIL BD FT) (7)
CQSLVB	1962	PRODUCTION OF SOFT LUMBER IN WEST SOUTH CENTRAL REG	(BIL BD FT) (24)
CQSLXR	1949	PRODUCTION OF SOFT LUMBER IN NORTHEAST & NORTHCENTRAL	(BIL BD FT) (7)
CQSPAS	1949	PRODUCTION OF SOFT PLYWOOD IN WASHINGTON	(BIL SQ FT) (1)
CQSPGS	1949	PRODUCTION OF SOFT PLYWOOD IN CALIFORNIA	(BIL SQ FT) (1)
CQSPHS	1959	PRODUCTION OF SOFT PLYWOOD IN IDAHO	(BIL SQ FT) (1)
CQSPMS	1956	PRODUCTION OF SOFT PLYWOOD IN MONTANA	(BIL SQ FT) (1)
CQSPOS	1949	PRODUCTION OF SOFT PLYWOOD IN OREGON	(BIL SQ FT) (1)
CQSPSS	1964	PRODUCTION OF SOFT PLYWOOD IN SOUTH	(BIL SQ FT) (1)
CQSPUS	1949	PRODUCTION OF SOFT PLYWOOD	(BIL SQ FT) (1)
CQWBUT	1970	PRODUCTION OF WET MACHINE BOARD	(MIL TONS) (25)
CQYPUB	1962	PRODUCTION OF YELLOW POPLAR LUMBER	(BIL BD FT) (24)
CRSLD	1960	AVERAGE SAWMILL OVERRUNS IN DOUG-FIR REGION	(11)
CRSLG	1960	AVERAGE SAWMILL OVERRUNS IN THE SOUTH	(11)
CRSLI	1960	AVERAGE SAWMILL OVERRUNS IN THE INLAND REGION	(11)
CSSLUB	1949	SHIPMENTS OF SOFT LUMBER	(BIL BD FT) (7)
CSSPUS	1950	SHIPMENTS OF SOFT PLYWOOD	(BIL SQ FT) (1)
CXHBUT	1944	EXPORTS OF HARDBOARD	(MIL TONS) (27)
CXHLUB	1950	EXPORTS OF HARDWOOD LUMBER	(BIL BD FT) (27)
CXIBUT	1944	EXPORTS OF INSULATION BOARD	(MIL TONS) (27)
CXPAUT	1929	EXPORTS OF PAPER & BUILDING PAPER	(MIL TONS) (27)
CXPBUS	1967	EXPORTS OF PARTICLEBOARD	(BIL SQ FT) (27)
CXPDUT	1929	EXPORTS OF PAPERBOARD & WET MACHINE BOARD	(MIL TONS) (27)
CXSLCB	1950	EXPORTS OF SOFT LUMBER FROM CANADA	(BIL BD FT) (13)
CXSLPB	1961	EXPORTS OF SOFT LUMBER FROM PACIFIC NORTHWEST	(BIL BD FT) (10)
CXSLUR	1949	EXPORTS OF SOFT LUMBER	(BIL BD FT) (27)
CXSPUS	1950	EXPORTS OF SOFT PLYWOOD	(BIL SQ FT) (27)
CXWPUT	1929	EXPORTS OF WOODPULP	(MIL TONS) (27)
CZHBUS	1955	HARDBOARD PLANT CAPACITY	(MIL TONS) (5)
CZIBUS	1955	INSULATION BOARD PLANT CAPACITY	(MIL TONS) (5)
CZSLCB	1949	CANADIAN SOFT LUMBER CAPACITY	(BIL BD FT) (2)
CZSLDB	1950	SOFT LUMBER CAPACITY IN DOUG FIR REGION	(BIL BD FT) (2)
CZSLSR	1950	SOFT LUMBER CAPACITY IN SOUTH	(BIL BD FT) (2)
CZSPUS	1950	SOFT PLYWOOD CAPACITY	(BIL SQ FT) (2)
ECGOUR	1947	NONRES CONSTR, PUBLIC, INDUSTRIAL	(BIL \$72) (29)
ECGIUR	1947	NONRES CONSTR, PUBLIC, HIGHWAYS	(BIL \$72) (29)

VAN	BASE YEAR	DESCRIPTION	SRC
ECG2UR	1947	NONRES CONSTR, PUBLIC, MILITARY	(BIL \$72) (29)
ECG3UR	1947	NONRES CONSTR, PUBLIC, EDUCATIONAL	(BIL \$72) (29)
ECG4UR	1947	NONRES CONSTR, PUBLIC, HOSPITAL	(BIL \$72) (29)
ECG5UR	1947	NONRES CONSTR, PUBLIC, CONSERVATION	(BIL \$72) (29)
ECG6UR	1947	NONRES CONSTR, PUBLIC, OTHER BLDGS.	(BIL \$72) (29)
ECG7UR	1947	NONRES CONSTR, PUBLIC, SEWERS	(BIL \$72) (29)
ECG8UR	1947	NONRES CONSTR, PUBLIC, WATER SUPPLY	(BIL \$72) (29)
ECG9UR	1947	NONRES CONSTR, PUBLIC, MISCELLANEOUS	(BIL \$72) (29)
ECHSCD	1956	HOUSING STARTS, CANADA, DUPLEX	(MIL UNITS) (14)
ECHSCM	1956	HOUSING STARTS, CANADA, MULTI-FAMILY	(MIL UNITS) (14)
ECHSCU	1956	HOUSING STARTS, CANADA, ONE-FAMILY	(MIL UNITS) (14)
ECHSCW	1956	HOUSING STARTS, CANADA, ROW HOUSES	(MIL UNITS) (14)
ECHSEM	1959	HOUSING STARTS, US NORTHEAST, MULTI-FAMILY	(MIL UNITS) (23)
ECHSEO	1959	HOUSING STARTS, US NORTHEAST, ONE-FAMILY	(MIL UNITS) (23)
ECHSNM	1959	HOUSING STARTS, US NORTHCENTRAL, MULTI-FAMILY	(MIL UNITS) (23)
ECHSNO	1959	HOUSING STARTS, US NORTHCENTRAL, ONE-FAMILY	(MIL UNITS) (23)
ECHSSM	1959	HOUSING STARTS, US SOUTH, MULTI-FAMILY	(MIL UNITS) (23)
ECHSSO	1959	HOUSING STARTS, US SOUTH, ONE-FAMILY	(MIL UNITS) (23)
ECHSUM	1964	HOUSING STARTS, US, HIGH-RISE	(MIL UNITS) (23)
ECHSUM	1959	HOUSING STARTS, US, MULTI-FAMILY	(MIL UNITS) (23)
ECHSUO	1959	HOUSING STARTS, US, ONE-FAMILY	(MIL UNITS) (23)
ECHSUT	1947	HOUSING STARTS, US, TOTAL	(MIL UNITS) (23)
ECHSWM	1959	HOUSING STARTS, US WEST, MULTI-FAMILY	(MIL UNITS) (23)
ECHSWO	1959	HOUSING STARTS, US WEST, ONE-FAMILY	(MIL UNITS) (23)
ECM3UR	1947	NONRES CONSTR, PUBLIC, HOUSING & DEVELOPMENT	(BIL \$72) (29)
ECMHUT	1947	MOBILE HOMES, TOTAL	(MIL UNITS) (4)
ECNROR	1955	NONRESIDENTIAL CONSTRUCTION, CANADA	(BIL \$71) (15)
ECNRUN	1949	NONRESIDENTIAL CONSTRUCTION, US	(BIL DOL) (29)
ECNRUR	1949	NONRESIDENTIAL CONSTRUCTION	(BIL \$72) (29)
ECP0UR	1947	NONRES CONSTR, PRIVATE, INDUSTRIAL	(BIL \$72) (29)
ECP1UR	1947	NONRES CONSTR, PRIVATE, OFFICE & OTHER COMMERCIAL	(BIL \$72) (29)
ECP2UR	1947	NONRES CONSTR, PRIVATE, RELIGIOUS	(BIL \$72) (29)
ECP3UR	1947	NONRES CONSTR, PRIVATE, EDUCATIONAL	(BIL \$72) (29)
ECP4UR	1947	NONRES CONSTR, PRIVATE, HOSPITAL	(BIL \$72) (29)
ECP5UR	1947	NONRES CONSTR, PRIVATE, MISCELLANEOUS BLDGS.	(BIL \$72) (29)
ECP6UR	1947	NONRES CONSTR, PRIVATE, FARM NONRES	(BIL \$72) (29)
ECP7UR	1947	NONRES CONSTR, PRIVATE, TELEPHONE & TELEGRAPH	(BIL \$72) (29)
ECP8UR	1947	NONRES CONSTR, PRIVATE, OTHER PUBLIC UTILITY	(BIL \$72) (29)
ECP9UR	1947	NONRES CONSTR, PRIVATE, ALL OTHER PRIVATE	(BIL \$72) (29)
ECRAUN	1962	REPAIR & ALTERATIONS EXPENDITURES	(BIL DOL) (26)
ECRAUR	1962	REPAIR & ALTERATIONS EXPENDITURES	(BIL \$72) (26)
ECR4UR	1947	NONRES CONSTR, PRIVATE, NONHOUSEKEEPING, RESIDENTIAL	(BIL \$72) (29)
EFFSEO	1966	AVERAGE FLOORSIZE OF NEW 1-FAMILY HOMES, NORTHEAST (THOU SQ FT)	(22)
EFFSNO	1966	AVERAGE FLOORSIZE OF NEW 1-FAMILY HOMES, NORTHCENTRAL (M SQ FT)	(22)
EFFSSO	1966	AVERAGE FLOORSIZE OF NEW 1-FAMILY HOMES, SOUTH (THOU SQ FT)	(27)
EFFSWO	1966	AVERAGE FLOORSIZE OF NEW 1-FAMILY HOMES, WEST (THOU SQ FT)	(22)
ENMHU	1947	TOTAL US HOUSEHOLDS	(MILLIONS) (21)
EN05U	1945	POPULATION, 0-5 YRS	(MILLIONS) (21)
EN15U	1945	POPULATION, 6-15 YEARS	(MILLIONS) (21)
EN24U	1945	POPULATION, 16-24 YEARS	(MILLIONS) (21)
EN44U	1945	POPULATION, 25-44 YEARS	(MILLIONS) (21)
EN64U	1945	POPULATION, 45-64 YEARS	(MILLIONS) (21)
EN65U	1945	POPULATION, 65 & OVER	(MILLIONS) (21)
EPPIUA	1950	PRODUCER PRICE INDEX, ALL COMMODITIES	(1967=1.0) (32)
EQGPUN	1929	GROSS NATIONAL PRODUCT	(BILS OF DOL) (19)
EQGPUR	1929	GROSS NATIONAL PRODUCT	(BILS OF \$72) (19)
EQINCA	1955	INDEX OF INDUSTRIAL PRODUCTION, ALL CLASSES, CANADA	(1971=1.0) (15)
EQINUA	1947	INDEX OF INDUSTRIAL PRODUCTION, ALL CLASSES	(1967=1.0) (19)
EQINUF	1954	INDEX OF INDUSTRIAL PRODUCTION, FURNITURE & FIXTURES	(1967=1.0) (19)
EQSTU	1965	PRODUCTION OF SWITCHES	(MILLIONS) (16)
EQUCU	1965	PRODUCTION OF UNDERGROUND BITUMINOUS COAL	(MIL TONS) (30)
EQUOU	1965	PRODUCTION OF UNDERGROUND ORES	(MIL TONS) (30)
EQXTU	1965	PRODUCTION OF CROSSTIES	(MILLIONS) (16)
EYDIUR	1939	REAL DISPOSABLE INCOME	(BILS \$72) (19)
PMHFUQ	1950	IMPORTS OF HARD PULPHOOD & PULPHOOD EQUIVALENT	(BIL CU FT) (8)
PMHOUR	1950	IMPORTS OF HARD LOGS	(BIL RD FT) (28)
PMHOUQ	1950	IMPORTS OF HARD LOGS	(BIL CU FT) (8)
PMHFUQ	1950	IMPORTS OF SFTWD PULPHOOD & PULPHOOD EQUIVALENT	(BIL CU FT) (8)
PMSLUQ	1949	IMPORTS OF SFT LUMBER, ROUNDWOOD EQUIVALENT	(BIL CU FT) (8)
PMHQUH	1950	IMPORTS OF SFTWOOD LOGS	(BIL RD FT) (28)
PM3OUQ	1950	IMPORTS OF SFTWOOD LOGS	(BIL CU FT) (8)
PMSPUQ	1960	IMPORTS OF SFTWOOD PLYWOOD, ROUNDWOOD EQUIVALENT	(BIL CU FT) (8)

VAR	BASE YEAR	DESCRIPTION	SRC
PPDFP1	1963	DOUGLAS-FIR NO 1 PEELER LOG PRICES, DELIVERED	(10)
PPDFP2	1963	DOUGLAS-FIR NO 2 PEELER LOG PRICES, DELIVERED	(10)
PPDFP3	1963	DOUGLAS-FIR NO 3 PEELER LOG PRICES, DELIVERED	(10)
PPDFS2	1963	DOUGLAS-FIR NO 2 SAWLOG PRICES, DELIVERED	(10)
PPDFS3	1963	DOUGLAS-FIR NO 3 SAWLOG PRICES, DELIVERED	(10)
PPDPL5	1960	SOUTHERN PINE SAWLOG PRICES, DELIVERED	(14)
PPHLS2	1963	HEMLOCK SAWLOG, NO 2 GRADE, DELIVERED	(10)
PPHLS3	1963	HEMLOCK SAWLOG, NO 3 GRADE, DELIVERED	(10)
PQCHU9	1949	VOLUME OF CHIPS PRODUCED, ROUNDWOOD EQUIVALENT	(BIL CU FT) (8)
PQHFCU	1949	VOLUME OF HARDWOOD PULPWOOD PRODUCED	(BIL CORDS) (8)
PQHFCU	1949	VOLUME OF HARDWOOD PULPWOOD PRODUCED, RNDWD EQUIV	(BIL CU FT) (8)
PQHLUG	1949	VOLUME OF HARDWOOD LUMBER PRODUCED, RNDWD EQUIV	(BIL CU FT) (8)
PQSFUC	1949	VOLUME OF SOFTWOOD PULPWOOD PRODUCED	(BIL CORDS) (8)
PQSFUC	1949	VOLUME OF SOFTWOOD PULPWOOD PRODUCED, RNDWD EQUIV	(BIL CU FT) (8)
PQSLCU	1950	VOLUME OF SOFTWOOD LUMBER PRODUCED, RNDWD EQUIV, CAN	(BIL CU FT) (13)
PQSLUG	1949	VOLUME OF SOFTWOOD LUMBER PRODUCED, RNDWD EQUIV	(BIL CU FT) (8)
PQSMUG	1950	VOLUME OF SOFTWOOD MISC. COMMODITIES PRODUCED, RW EQ	(BIL CU FT) (8)
PQSPUG	1949	VOLUME OF SOFTWOOD PLYWOOD PRODUCED, RNDWD EQUIV	(BIL CU FT) (8)
PQWPUT	1929	VOLUME OF WOODPULP PRODUCED	(MIL TONS) (25)
PXHFCU	1950	EXPORTS OF HARDWOOD PULPWOOD & PULPWOOD EQUIVALENT	(BIL CU FT) (8)
PXHOUB	1950	EXPORTS OF HARDWOOD LOGS	(BIL BD FT) (27)
PXSFUC	1950	EXPORTS OF SOFT PULPWOOD & PULPWOOD EQUIVALENT	(BIL CU FT) (8)
PXSLUG	1950	EXPORTS OF SOFTWOOD LUMBER, RNDWD EQUIVALENT	(BIL CU FT) (8)
PXSOPR	1950	EXPORTS OF SOFTWOOD LOGS FROM THE PACIFIC NORTHWEST	(BIL BD FT) (10)
PXSOUH	1950	EXPORTS OF SOFTWOOD LOGS	(BIL BD FT) (27)
PXSOUH	1950	EXPORTS OF SOFTWOOD LOGS	(BIL CU FT) (27)
PXSPUG	1956	EXPORTS OF SOFTWOOD PLYWOOD, RNDWD EQUIVALENT	(BIL CU FT) (8)
RBPBS5	1952	COSTS OF SEED BED PREPARATION, SOUTH	(\$/ACRE) (6)
RPFE05	1962	COSTS OF FERTILIZATION IN THE DOUG-FIR REGION	(\$/ACRE) (3)
RPHSD1	1960	PRICE OF FS STUMPAGE IN DOUG-FIR REGION (AT HARVEST, LOG SCALE)	(18)
RPPLOS	1962	COSTS OF PLANTING IN THE DOUG-FIR REGION	(\$/ACRE) (3)
RPPPL5	1961	PRICE OF PINE STUMPAGE, PRIVATE & INDUSTRY SOURCES, LA	(SOLD) (14)
RPPR05	1962	COSTS OF MECHANICAL SITE PREPARATION, DOUG-FIR REGION	(\$/ACRE) (3)
RPPR55	1952	COSTS OF MECHANICAL SITE PREPARATION, SOUTH	(\$/ACRE) (6)
RPPS01	1960	PRICE OF FS STUMPAGE IN THE DOUG-FIR REGION	(SOLD) (3)
RPRC55	1952	COSTS OF RELEASE CUTTING IN THE SOUTH	(\$/ACRE) (6)
RPRU55	1961	COSTS OF REMOVING UNDESIREABLE TREES IN THE SOUTH	(\$/ACRE) (6)
RPTC55	1952	COSTS OF TIMBER CRUISING IN THE SOUTH	(\$/ACRE) (6)
RPTH05	1962	COSTS OF PRE-COMMERCIAL THINNING IN THE DOUG-FIR REGION	(\$/ACRE) (3)
RPTH55	1952	COSTS OF PRE-COMMERCIAL THINNING IN THE SOUTH	(\$/ACRE) (6)
RPTM55	1952	COSTS OF TIMBER MARKING IN THE SOUTH	(\$/ACRE) (6)
RQHS41	1949	TIMBER CUT, WASHINGTON, FOREST SERVICE	(BIL MD FT) (10)
RQHS45	1949	TIMBER CUT, WASHINGTON, PRIVATE	(BIL BD FT) (10)
RQHS49	1949	TIMBER CUT, WASHINGTON, TOTAL	(BIL BD FT) (10)
RQHS01	1960	TIMBER CUT, DOUG-FIR REGION, FOREST SERVICE	(BIL BD FT) (18)
RQHS05	1949	TIMBER CUT, DOUG-FIR REGION, PRIVATE	(BIL BD FT) (10)
RQHS08	1949	TIMBER CUT, DOUG-FIR REGION, PUBLIC EXC. FOR SERV.	(BIL BD FT) (10)
RQHSG1	1952	TIMBER CUT, CALIFORNIA, FOREST SERVICE	(BIL BD FT) (10)
RQHSG5	1952	TIMBER CUT, CALIFORNIA, PRIVATE	(BIL BD FT) (10)
RQHSG4	1952	TIMBER CUT, CALIFORNIA, TOTAL	(BIL BD FT) (10)
RQHSH1	1969	TIMBER CUT, IDAHO, FOREST SERVICE	(BIL BD FT) (10)
RQHSH5	1969	TIMBER CUT, IDAHO, PRIVATE	(BIL BD FT) (10)
RQHSH9	1969	TIMBER CUT, IDAHO, TOTAL	(BIL BD FT) (10)
RQHSM1	1968	TIMBER CUT, MONTANA, FOREST SERVICE	(BIL BD FT) (10)
RQHSM5	1968	TIMBER CUT, MONTANA, PRIVATE	(BIL BD FT) (10)
RQHSM9	1968	TIMBER CUT, MONTANA, TOTAL	(BIL BD FT) (10)
RQHS01	1949	TIMBER CUT, OREGON, FOREST SERVICE	(BIL BD FT) (10)
RQHS05	1949	TIMBER CUT, OREGON, PRIVATE	(BIL BD FT) (10)
RQHS09	1949	TIMBER CUT, OREGON, TOTAL	(BIL BD FT) (10)
RQHSP5	1949	TIMBER CUT, PONDEPINE REGION, PRIVATE	(BIL BD FT) (10)
RQHSP8	1949	TIMBER CUT, POND PINE REGION, PUBLIC EXCL FOR SER	(BIL BD FT) (10)
RQPS01	1960	TIMBER SOLD, DOUG-FIR REGION, FOREST SERVICE	(BIL BD FT) (18)
HVHSD1	1960	VALUE OF TIMBER CUT IN DOUG-FIR REGION, FOREST SERV.	(MIL DOLS) (18)
RVUSD1	1959	VALUE OF UNCUT TIMBER UNDER CONTRACT, D-F REGION, FS	(MIL DOLS) (2)
RVPSD1	1960	VALUE OF TIMBER SOLD, DOUG-FIR REGION, FOR. SER.	(MIL DOLS) (18)

### Appendix 3: Data Sources

1. American Plywood Association.  
1980. Regional production and distribution patterns of the softwood plywood industry: 1925-1979. Economics Report E29. Annual. Tacoma, WA.
2. Estimated by author.
3. Industrial Forestry Association.  
1978. Industrial tree farm performance: 1949-1976. Portland, Ore.
4. Manufactured Housing Institute.  
1980. Quick Facts about the Mobile Home Industry. Arlington, Virginia. Annual.
5. McKeever, David B.  
1979. Hardboard and insulation board plants in the United States. USDA For. Serv. Resource Bull. FPL-7, For. Prod. Lab., Madison, Wis.
6. Moak, James E., James Kucera, and William Watson.  
1977. Current costs and cost trends for forestry practices in the south. Forest Farmer Manual, March 1977.
7. National Forest Products Association.  
1949-1979. Fingertip Facts and Figures. Washington, D.C. Quarterly.
8. Phelps, Robert.  
1977. The demand and price situation for forest products: 1949-1976. USDA For. Serv. Misc. Pub. No. 1357. (Data after 1976 obtained from Alice H. Ulrich, For. Resources Econ. Res. Staff, USDA For. Serv., Washington, D.C.)
9. Random Lengths.  
1962-1978. Annual Yearbook. Eugene, Oregon. (Data prior to 1962 extrapolated from wholesale price indices for wood commodities-Ref. 32)
10. Ruderman, Florence K.  
1980. Production, prices, employment and trade in Northwest Forest Industries. USDA For. Serv. Pac. Northwest For. Range Exp. Stn., Portland, Ore. Quarterly.
11. Spelter, Henry.  
1980. Trends in sawmill overruns. For. Prod. J. 30(9):21-24.
12. State of Louisiana Dept. of Agriculture.  
1980. Louisiana Forest Products Quarterly Market Report. Baton Rouge, Louisiana. Quarterly.
13. Statistics Canada.  
1980. Canadian Forestry Statistics. Cat. No. 25-202. Annual. Ottawa.
14. Statistics Canada.  
1980. Canadian Housing Starts and Completions. Cat No. 64-002. Monthly. Ottawa.
15. Statistics Canada.  
1980. Economic Demand Variables. Cat. No. 11-003. Quarterly. Ottawa.
16. U.S. Department of Agriculture, Forest Service.  
1980. An analysis of the timber situation in the United States, 1952-2030. Review draft. Washington, D.C.
17. U.S. Department of Agriculture, Forest Service.  
1980. Appraisal summary for Region 6, East Side index sale: 1960-1979. Timber Mgmt. Staff. Unpublished. Portland, Ore.
18. U.S. Department of Agriculture, Forest Service.  
1980. Timber Cut and Sold -Region 6: 1960-1979 Timber Mgmt. Staff. Unpublished. Quarterly. Portland, Ore.
19. U.S. Department of Commerce, Bureau of Economic Analysis.  
1980. Survey of Current Business. Monthly. Washington, D.C.
20. U.S. Department of Commerce, Bureau of the Census.  
1980. Current Population Reports, Series P-20. Washington, D.C.
21. U.S. Department of Commerce, Bureau of the Census.  
1980. Current Population Reports, Series P-25. Washington, D.C.
22. U.S. Department of Commerce, Bureau of the Census.  
1980. Characteristics of New Housing. Construction Reports, Series C-25. Annual. Washington, D.C.
23. U.S. Department of Commerce, Bureau of the Census.  
1980. Housing Starts, Series C-20. Monthly. Washington, D.C.
24. U.S. Department of Commerce, Bureau of the Census.  
1980. Lumber Production and Mill Stocks CIR MA-24T. Annual. Washington, D.C.
25. U.S. Department of Commerce, Bureau of the Census.  
1980. Pulp, Paper, and Board. Current Industry Reports, Series M26A. Annual. Washington, D.C.

26. U.S. Department of Commerce, Bureau of the Census.  
1980. Residential Repairs and Alterations, Series C-50. Quarterly. Washington, D.C.
  27. U.S. Department of Commerce, Bureau of the Census.  
1980. U.S. Exports -Commodity by Country. FT 410. Monthly. Washington, D.C.
  28. U.S. Department of Commerce, Bureau of the Census.  
1980. U.S. Imports Commodity by Country. FT 435. Monthly. Washington, D.C.
  29. U.S. Department of Commerce, Bureau of the Census.  
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  30. U.S. Dept. of Interior, Bureau of Mines.  
1979. Minerals Yearbook. Annual. Washington, D.C.
  31. U.S. Department of Labor, Bureau of Labor Statistics.  
1980. Monthly Labor Review. Washington, D.C.
  32. U.S. Department of Labor. Bureau of Labor Statistics.  
1980. Supplement to Producer Prices and Price Indexes. Annual. Washington, D.C.
  33. Western Wood Products Association.  
1980. Statistical Yearbook of the Western Lumber Industry. Annual. Portland, Ore.
  34. Western Wood Products Association.  
1980. Western Lumber Facts. Monthly. Portland, Ore.
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#### Appendix 4: Illustrative TSP session with FORDAT

UWLG	—UWLG activates the computer terminal.
MACC 36.35 TTY U02013	
@RUN SPELTER, , \$4.00	—This identifies the user. Statement contains user's name, acct. no., personal I.D. No., and the dollar limit for the run.
RUNID:Y24895 DATE:121180 TIME:121634	
PASSWORD PLEASE	—User's personal password.
CONTINUE	
@TSP	—Call TSP processor.
<T S P - UNIVERSITY OF WISCONSIN - VERSION 6.1 OF 04 SEP 1980, TODAY'S DATE IS: 12/11/80	
TSP AT YOUR SERVICE	—This statement must start each session with FORDAT. It aligns the data with their respective calendar years. Note the \$ sign which ends each line of input for TSP.
> YEAR 1929 \$	
> IN FS*FORDAT \$	—Call up the FORDAT data bank.
> DECIMALS ALL 2 \$	—Limits printing of data to two decimal places.
> SAMPLE YEAR 1945 1960 \$	—Defines the desired time interval.
SAMPLE: 17. 32.	
> PRINT EQGPUR CQPAUT CQPDUT \$	—Asks for the data listed to be printed.
EQGPUR CQPAUT CQPDUT	
1945 560.00 8.46 8.01	
1946 476.90 9.77 8.53	
1947 468.30 10.70 9.34	
1948 487.70 11.12 9.51	
1949 490.70 10.35 9.13	
1950 533.50 12.06 11.09	
1951 576.50 13.01 11.77	
1952 598.50 12.20 10.91	
1953 621.80 12.74 12.49	
1954 613.70 13.08 12.33	
1955 654.80 14.50 14.04	
1956 668.80 15.42 14.38	
1957 680.90 14.91 14.20	
1958 679.50 14.89 14.27	
1959 720.40 16.51 15.62	
1960 736.80 16.81 15.85	

- > LIST (API) EQGPUR CQPAUT CQPDUT \$ —Defines a list called API.
- > CORRELATION (API) \$ —Asks for a table of correlation coefficients between the data in API to be printed out.

#### CORRELATION MATRIX

	1	2	3
	EQGPUR	CQPAUT	CQPDUT
1 EQGPUR	1.00000		
2 CQPAUT	.897948	1.00000	
3 CQPDUT	.935693	.989744	1.00000

NUMBER OF OBSERVATIONS USED IN COMPUTATIONS = 16

- > C=1 \$ —Defines a constant C.
- > OLSQ CQPAUT C EQGPUR \$ —Calls for a least squares regression to be performed on CQPAUT, the constant, and the variable EQGPUR.
- ORDINARY LEAST SQUARES
- DEPENDENT VARIABLE...

#### CQPAUT

RIGHT-HAND VARIABLE	ESTIMATED COEFFICIENT	STANDARD ERROR	T-STATISTIC	INCREMENTAL SUM OF SQUARES
C	-1.95768	1.96721	-.995159	90.4551
EQGPUR	.248565-01	.325596-02	7.63417	17.5202

R-SQUARED = .80631

STANDARD ERROR OF THE REGRESSION = 1.11868

MEAN VALUE OF DEPENDENT VARIABLE = 12.9077

SUM OF RESIDUALS = .119209-06

SUM OF SQUARED RESIDUALS = 17.5202

DURBIN-WATSON STATISTIC (ADJ. FOR 0. GAPS) = 1.00231

NUMBER OF OBSERVATIONS = 16.

#### ESTIMATE OF VARIANCE-COVARIANCE MATRIX OF ESTIMATED COEFFICIENTS

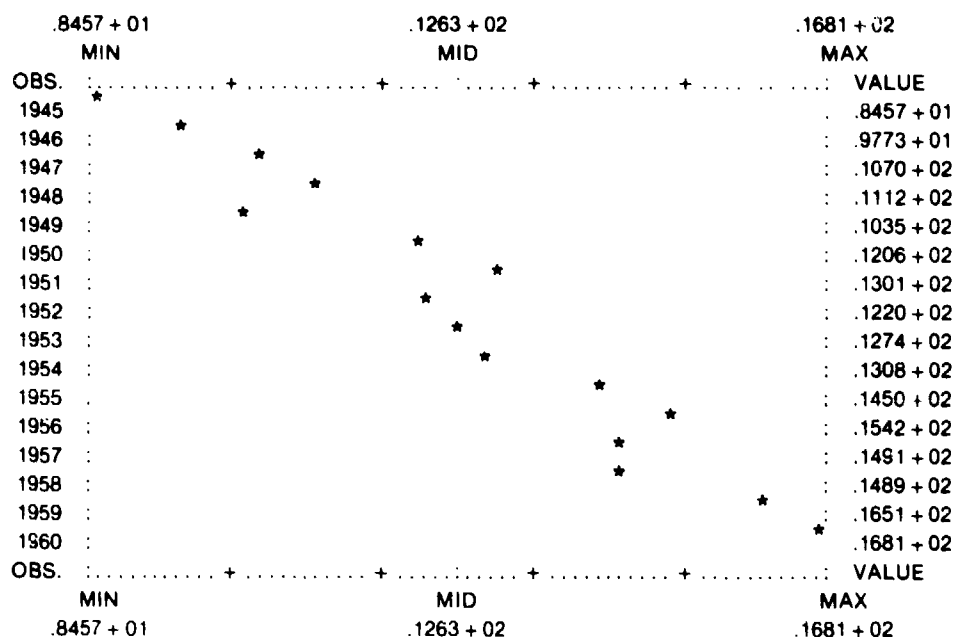
	1	2
1	3.86990	.634007-02
2	-.634007-02	.106012-04

> TPL0T VAR = CQPAUT \$

—Calls for a plot of CQPAUT.

# LEGEND

MINIMUM DATA VALUE .....84570 + 01  
 MAXIMUM DATA VALUE .....16809 + 02  
 MID-POINT VALUE .....12633 + 02  
 RANGE OF PLOT .....83520 + 01  
 STEP VALUE .....16704 + 00  
 NUMBER OF POINTS .....16  
 SERIES NAME .....CQPAUT



> SAMPLE YEAR 1960 1978 \$

—Redefines the sample interval.

SAMPLE: 32. 50.

—Defines a group of variables.

> GROUP CQSLOB CQSLUB \$

> BASE CB UB \$

—Performs an indexing transformation on the above group. It divides each series by their first values in the sample to create an index with the base year equal to 1.



> PRINT CR UB \$

--Asks for a printout of the transformed variables.

	CB	UB
1960	1.00	1.00
1961	1.03	.98
1962	1.11	1.01
1963	1.24	1.01
1964	1.30	1.07
1965	1.36	1.06
1966	1.32	1.05
1967	1.29	1.01
1968	1.42	1.08
1969	1.45	1.06
1970	1.42	1.03
1971	1.62	1.12
1972	1.78	1.17
1973	1.97	1.19
1974	1.72	1.04
1975	1.47	.98
1976	1.99	1.14
1977	2.27	1.16
1978	2.43	1.15

> END \$

—Ends TSP session.

MAXIMUM MEMORY USAGE WAS 5107 WORDS

END TSP.

@FIN

—Terminates run.

RUNID: Y24895 PROJECT: USER:  
12:24:40 Y24695 FIN

TOTAL COST \$0.74

USER BALANCE \$1298.01  
FILE CHARGES FOR PREVIOUS BILLING DAY \$0.92

RUN TIME: 12:16:34 —> 12:24:40 DEC 11,80. PREV: 12:15:26 DEC 11,80  
>-

2.0-16-11/81

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U.S. Forest Products Laboratory

FORDAT--An Information Retrieval System for Forest Economic Data, by Henry Spelter, Madison, Wis., FPL, For. Serv., USDA.

16 p. (Gen. Tech. Pap. FPL 33).

Time series data frequently used in Forest Service studies of wood products consumption have been stored in a data retrieval system on the computer of the University of Wisconsin. The data cover activity in wood processing from forest to end use. Prices and costs at succeeding stages, historical usage, production rates, and other relevant data to wood use analysis were compiled. The system is available on-line and may be accessed directly or the data may be obtained in printed form by interested users.

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